

Guidance for first responders on the short-term care of confiscated pangolins

Prepared by the IUCN SSC Pangolin Specialist Group
December 2021



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Introduction

▼ White-bellied pangolin (*Phataginus tricuspis*) © Darren Pietersen



Introduction

Pangolins are trafficked in high numbers. Estimates suggest that in the period 2000–2019 the equivalent of approximately 900,000 pangolins were illegally traded globally¹.

This primarily occurs within Asia and Africa, and from Africa to Asia², but also involves Europe, North America, and other parts of the world. Trade can involve live and dead pangolins, their scales, and other body parts (e.g., skins). Live pangolins are commonly confiscated by local, regional or national law enforcement authorities in Asia and Africa and many are in ill health because of poor treatment in the illegal trade³. Trafficking takes place despite legislation prohibiting the harvest of pangolins in most countries where pangolins are found and a ban on the commercial, international trade in wild-caught pangolins, which applies to all eight species.

Part 1 of this guide is for first responders to instances of trafficking involving live pangolins, including police and customs officers, and other law enforcement agents.

It provides guidance on the key steps that first responders should immediately take to give confiscated pangolins the best chance of survival – a period that may last from several hours to 1-2 days. This is in recognition that pangolins are typically in illegal trade for days or weeks at a time, kept in poor conditions, are usually starving and dehydrated, and may have been force-fed inappropriate diets³.

▼ **Black-bellied pangolin (*Phataginus tetradactyla*)**
© Rod Cassidy.





▲ Philippine pangolin (*Manis culionensis*) © Sabine Schoppe

Part 2 of this guide outlines additional steps for first responders to care for pangolins and prevent deteriorating health if emergency care or transfer to a longer-term care facility will take more than two days and the pangolin must be held by the first responder in the short-term – likely a period of a few days to a week.

The guidance recognises that the resources and infrastructure required to deal with confiscated animals may be limited in some countries and circumstances.

Pangolins are extremely susceptible to stress, which can lead to health complications. **First responders should not attempt to administer emergency veterinary care to deal with health issues, unless they are a veterinarian or appropriately trained professional.**

However, minimising stress to the pangolin can help to prevent health issues from occurring or worsening. These guidelines therefore provide recommendations on minimising stress to confiscated pangolins throughout. Importantly, stress to pangolins can be caused or worsened by the presence, sounds and smells of humans and other animals. It is vital to reduce stress by limiting human disturbance near pangolins when following the instructions in this document.

Important information is highlighted in warning boxes throughout the document. Red warning boxes indicate potential hazards or prohibited actions. Yellow boxes present cautionary advice to be aware of whilst implementing the guidance in the document. Similarly, grey boxes present alternative measures; these are next best options that can be considered if the best practice guidelines outlined in the document cannot be completed.

Part 1: Immediate steps for first responders

▼ Temminck's pangolin (*Smutsia temminckii*) © Dana Allen



Immediate steps for first responders

Pangolins confiscated from the illegal trade have usually been kept in poor conditions and are typically in a state of ill health. This section outlines the key steps to take immediately following confiscation to ensure that rescued pangolins have the best chance of survival. The steps are below and should be implemented in the following order:

- 1. Alert a care provider to provide emergency veterinary care**
- 2. While awaiting expert assistance, remove the pangolin from constraints and place in a holding container**
- 3. Prepare the pangolin for next steps**

These steps will help the first responder to arrange emergency veterinary care and/or a placement for longer-term care for the confiscated pangolin as soon as possible, and to minimise stress to the animal whilst waiting for the next step. This section describes best practice, but it may not be possible to follow these exact steps in all circumstances.

Warning: Minimise disturbance around the pangolin. Stress can be caused or worsened by the presence, sounds and smells of humans and other animals. It is vital to reduce stress to the pangolin by limiting human disturbance at all stages of care, such as telephones ringing, doors slamming, and loud voices. Avoid staging photographs or media events with confiscated pangolins beyond what is essential for law enforcement and documentation purposes.



Circumstances where it is inappropriate to confiscate or rescue a pangolin:



There are conditions under which live pangolins may be encountered by people but do not require confiscation or rescue. For instance, pangolins can occur in urban settings, including gardens and urban areas such as school grounds, or in rural villages near homes.

In these circumstances, first responders – in consultation with experts if needed (see Part 4) – should determine whether removing the animal from its immediate environment is in the best interests of the individual because it is at risk. This should involve a risk assessment considering whether the animal may be at risk from road traffic, feral dogs, or would likely be collected and introduced into illegal trade if opportunistically found by local people. If the animal appears healthy and these risks are low, it will likely move out of the area of its own accord.

If in doubt, contact a veterinarian, trained professional or care facility using the directory in Part 4 of this document for further guidance.

Step 1: Alert a care provider to provide emergency veterinary care

It is vital that the pangolin receive emergency veterinary care as soon as possible. **Immediately contact a veterinarian/trained professional and/or a suitable care facility with expertise in caring for pangolins to provide this care. A list of care providers, including individuals, organisations and care facilities with expertise in caring for confiscated pangolins, is provided in Part 4.**

Contact these care providers to arrange emergency veterinary care and for further advice on caring for the pangolin, as well as to discuss the prospect of them receiving the animal for longer-term care. Please note that while the individuals and organisations listed in the directory can offer appropriate expertise, there may be others locally that are also appropriate, but which are not included in this guide. It may also be appropriate to contact local wildlife or law enforcement agencies.

The remainder of Part 1 provides guidance to minimise stress to pangolins *after* contacting a care provider and while waiting for help to arrive. It also provides guidance on transporting the pangolin; for example, from the place of confiscation to a veterinary hospital or longer-term care facility.

Warning: It is illegal to possess and/or transport pangolins within most countries, and across borders between countries. Seek advice from relevant local wildlife or law enforcement agencies or ask the care provider that you have contacted for further advice on local and national restrictions on possessing and transporting pangolins.



Step 2: Remove the pangolin from its constraints and place in a suitable holding container

While waiting for a care provider to arrive, identify a quiet place to keep the pangolin temporarily and take it there within its constraints.

Images 1 and 2 show common confiscation scenarios in Africa and Asia. If the animal is not in any constraints, cover it in a blanket, towel or shirt (ensuring its nose is not smothered by the material and still has air to breathe) and carry it there. **See Box 2** on how to safely handle and lift the pangolin.

The quiet place might be an area or a room where you can block all potential escape routes. Keep the number of people near the pangolin to a minimum. Ensure that anyone near the animal is as quiet as possible. Transferring the pangolin to a quiet place temporarily before removing the constraints will help to minimise stress to the pangolin during and after the process of being moved. It also means the pangolin can be recaptured if it escapes after the constraints are removed.

Once the pangolin is in a quiet place, a suitable holding container should be created for the pangolin. Create the holding container as quickly as possible using the guidance in this section to avoid leaving the pangolin in its constraints for a long period of time

After a holding container has been created, the pangolin's constraints can be removed using the instructions in this section. It can then be placed in the holding container and held here while waiting for expert assistance.

Prevent the pangolin from escaping:



Pangolins can move quickly and climb high so moving the pangolin to a quiet place allows for potential routes to be blocked should the pangolin try to escape.

Pangolins will often attempt to flee into a confined space (e.g. under a car seat) and removing the pangolin from this place may cause injury. Therefore, it is important to pick up the pangolin as soon as possible after removing the constraints and place it in a secure holding container. Instructions on how to create this container are included in this section.

A. Create a holding container

A holding container can provide a safe, comfortable space for the pangolin to rest in. It can also help to reduce stress to the pangolin by creating a dark and enclosed space for it to sleep in, replicating the underground burrows and tree hollows pangolins occupy when in the wild. Most pangolin species are nocturnal, meaning they are active at night. The holding container therefore provides darkness so the pangolin can sleep during the day.

This section provides instructions on how to create a holding container. Key considerations include using material that the pangolin cannot break through, using a suitable substrate that the pangolin can hide and burrow in, and creating a structure that has air holes or vents and a solid lid. The pangolin can be held in this holding container for 1-2 days. However, it should be checked at least every 4 hours, given the opportunity to exercise if it appears to be in distress and be provided with water. Ideally, the holding container will be easily portable so the pangolin can be transported in it to a suitable care facility for longer-term care.



▲ **Image 1:** Trafficked pangolins are often found in tied up sacks in the backs of cars. © African Pangolin Working Group.

How to deal with multiple pangolins:



In the wild, pangolins are solitary. Being close to other pangolins can increase stress and should be avoided where possible. If multiple pangolins have been confiscated, each pangolin should have a separate holding container. The only exception is mother offspring pairs, which should always be kept together. **Box 1** gives instructions on how to identify these pairs.

If it is not possible to create individual holding containers for each pangolin, then temporarily housing more than one pangolin together is acceptable until a more suitable space can be found. However, the holding container should ideally be large enough so that both pangolins can stretch out and access water. See below for more information on creating a holding container.



▲ **Image 2:** Pangolins trafficked in Africa and Asia are frequently constrained in nylon sacks. © Tikki Hywood Foundation.

To create a holding container:

1. Find a container made of strong material that can be easily secured, for example, a wooden box **Image 3**, a pet carrier (e.g. for a dog or cat, see **Image 4**) or a plastic storage box **Image 5 and 6**. A basket lined with a towel can be used as an alternative holding container, if a container with a lid or opening cannot be found.

2. Ensure the holding container is well-ventilated by making air holes on the opening (i.e. the lid or door) and walls of the holding container **see Images 5 and 6** and placing it near, but not directly next to, an open window, fan or air conditioning unit. Be aware that the pangolin may escape from an open window, so ensure the pangolin cannot reach or climb up to open windows should it break out of the holding container.



▲ **Image 3:** Wooden holding container with air holes and lined with a towel. © African Pangolin Working Group.



▲ **Image 4:** Temminck's pangolin being transported in a pet carrier lined with a towel. © African Pangolin Working Group.



▲ **Image 5:** Plastic storage box with large airhole, suitable for temporarily keeping a pangolin. © Elisa Panjang.



▲ **Image 6:** Plastic storage box with multiple small air holes. © Elisa Panjang.

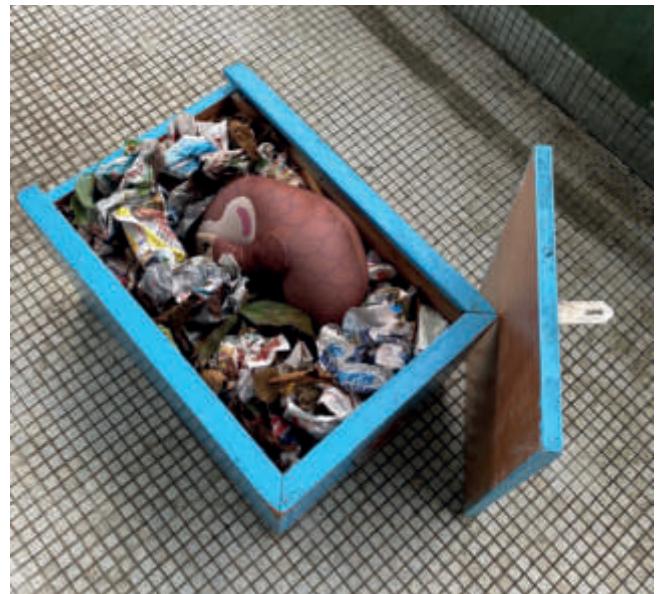
3. Line the bottom of the container with a clean towel or blanket. If a towel or blanket is not available, use a substrate which allows the pangolin to bury itself, for example, straw, leaf litter **Image 7** or sheets of newspaper scrunched up into balls, which the pangolin can dig and roll into, with a few dry leaves, if available, for olfactory stimulation **Image 8**.

Do not use an organic substrate (leaf litter, soil, straw) if the pangolin has any open wounds.

4. Ensure the opening to the holding container is secure. For example, once the pangolin is inside, secure the door with a lock or ties, or secure a lid by strapping the container shut. Be aware not to cover any air holes with straps and ties.



▲ **Image 7:** Wooden holding container with leaf litter for a Chinese pangolin to dig in and bury itself. © Kadoorie Farm and Botanic Garden.



▲ **Image 8:** Wooden holding container with balls of newspaper for pangolins to roll and bury themselves in. Toy is used for demonstration. © Kadoorie Farm and Botanic Garden.

Points to consider when crating a holding container:



- Pangolins can break through weak materials like cardboard easily using their claws.
- Backpacks are also unsuitable as the pangolin will not have enough air to breathe.
- The holding container should be large enough to contain the pangolin and for it to stretch out and move around.
- It is important that the container is heavy enough that the pangolin cannot easily tip it over and has no sharp edges.

What to do if a holding container is not available:



If a suitable holding container is not available, cover the pangolin in a soft blanket, towel or shirt to reduce stress to the pangolin. Leave an opening in the fabric to make sure the pangolin has enough air to breathe. In these cases, it is even more important to block any potential escape routes around the pangolin.

B. Remove the pangolin from its constraints

Once you have created a holding container, remove the pangolin from any constraints using the instructions below. In many African countries, pangolins are commonly trafficked in grain sacks, plastic bags, wire cages, backpacks, and buckets. Within these containers, they may also be bound with wire or cabling. In Asian countries, pangolins are commonly found in plastic sacks. In both Africa and Asia, these sacks may be made from man-made materials, such as nylon or plastic, or natural fibres, such as hessian or jute.

The following steps provide guidance for removing the constraints:

1. Cut or unwind any ties or wires binding the constraints shut using a pair of scissors or wire cutters – for example, a cord tying a grain sack **Image 9** or wire sewing shut a plastic container **Image 10**.



▲ **Image 9:** Pangolins confiscated in Malaysia in black and blue plastic sacks. © Sabah Wildlife Department.

Other confiscation scenarios to be aware of:



In some instances, pangolins are not found within constraints, but instead are held by their tail during transportation or whilst being sold illegally. Pangolins should not be handled in this way as it is highly distressing and may cause harm. If the pangolin is not constrained, handle and lift it using the guidance in **Box 2**.

Furthermore, whilst rare, there have been instances in African countries where pangolins have been found with holes drilled in their scales and wire threaded through them, so they are unable to uncurl (**see Image 14**). Cut the wire using wire cutters and very carefully remove it. If you do not have the correct tools available, wait for emergency care to arrive to avoid harming the pangolin whilst attempting to remove the wire.



▲ **Image 10:** Plastic drum sewn shut with wire. © Tikki Hywood Foundation.

2. Alternatively, if the pangolin is in a wire cage (**Image 11**), open the cage, or cut the wires to remove the pangolin if needed, taking care not to hurt the animal.

3. Once the container is open (**Image 12**), immediately remove the pangolin, using both hands to pick it up. **See Box 2** for more instructions on handling the pangolin.



▲ **Image 11:** Sunda pangolin found in a wire cage in Sabah, Malaysia. © Scubazoo.

4. Cut away any restrictions binding the pangolin, such as wire or netting, using scissors or wire cutters, being careful not to hurt the pangolin (**Image 13**).



▲ **Image 12:** Temminck's pangolin found in plastic bucket. © African Pangolin Working Group.



▲ **Image 13:** Temminck's pangolin confiscated in makeshift wire cage. © African Pangolin Working Group



▲ **Image 14:** Wire threaded through a Temminck's pangolin's scales. © Tikki Hywood Foundation.

After removing the constraints, allow the pangolin to stretch out and adjust to its new surroundings. This will help to minimise stress. Check to see if the pangolin is accompanied by any offspring. Infant or juvenile pangolins stay close to their mothers. Adult female pangolins will often curl up around their offspring, which means it may not immediately be apparent that an infant or juvenile pangolin is also present. Mothers and their offspring should not be separated. **See Box 1** for guidance on how to identify mother and offspring pairs.

After the constraints have been removed, place the pangolin in its holding container. Lift and handle the pangolin using the guidance in **Box 2**.

How to deal with force-fed pangolins:



Pangolins are often kept tightly curled up in containers or nets for long periods of time. Furthermore, in some instances, traffickers in Southeast Asia (e.g. Vietnam) will force feed pangolins a mixture of water and cornmeal to increase their weight, which can cause health problems, such as diarrhea⁴. This means that upon confiscation pangolins are likely to be covered in their own faeces and urine.

In such cases, use water that is slightly warm to the touch to gently rinse the pangolin and remove the excrement, preferably while the pangolin is curled up. Avoid pouring large volumes of water on the pangolin, submerging the head in water, or covering the nostrils, which may prevent the pangolin from breathing. Do not leave the pangolin in the sun to dry as it will overheat, instead dry the pangolin using a clean towel.

Box 1. How to identify mother and offspring pairs

Infant or juvenile pangolins may or may not be with their mothers when confiscated from illegal trade. If found together, do not separate the offspring from its mother. This box will help first responders to identify mother and offspring pairs.

An infant pangolin will still be reliant on its mother for milk and care, and so will remain close to her. The infant may be seen riding on the mother's back (as in **Image 15**), usually the lower back or tail, and the mother may curl up around the infant pangolin to protect it. A young infant pangolin's scales may not yet have hardened (see **Image 16**). A juvenile pangolin (**Images 17 and 18**) will not need milk from its mother but will remain close and may be carried on her back.

Warning: Do not remove an infant or juvenile pangolin from its mother, if present. Mother and offspring pairs should be kept together in the same holding container.



▲ **Image 15:** Infant Indian pangolin being carried on its mother's back. © Rajesh Mohapatra.



▲ **Image 16:** Infant pangolin, approximately 10 days old, with semi-transparent scales © Tikki Hywood Foundation.



▲ **Image 17:** Infant black-bellied pangolin © Liberia Chimpanzee Rescue & Protection.



▲ **Image 18:** Juvenile Sunda pangolin; its scales have hardened. © Zaharil Dzulkafly.

Box 2. Safely handling the pangolin

The instructions in this box will help the first responder to handle the pangolin safely. Handling the pangolin safely will help to minimise stress to the animal and the risk of injury to both the pangolin and the handler.

Before handling, put on a pair of thick gloves (or use a blanket or towel if no gloves are available). This is important, particularly when handling larger species, to reduce risk of injury to the holder. Latex gloves may be adequate for handling smaller species if thick gloves are not available, however they may easily tear on the pangolin's scales.

Remember to follow safe manual handling methods when lifting larger pangolin species, for example the giant pangolin, which can weigh up to 40 kg (see **Part 3 for a species identification guide**). Larger species of pangolin should be picked up using a safe lifting stance and will require two people. Do not attempt to lift the pangolin if the load is unmanageable for one person and cannot be done safely.

Warning: Do not handle the pangolin unnecessarily as doing so may cause stress and cause or worsen health issues. The pangolin can be handled to remove any constraints, transfer it to a holding place and container, to offer water, and to monitor its health. Other reasons for handling must only be in the interest of the pangolin's well-being.



Do not hold the pangolin by the tail as this can be highly distressing and may cause injury. Follow the instructions below for the safe method of handling and lifting the pangolin.

Before moving the pangolin, ensure the place it is being transferred to (e.g. on the ground, in its holding container or on another surface) is safe. To do this, block any escape routes, remove any objects the pangolin might tightly curl up around, and ensure the surface is stable and away from any hazards (e.g. sharp objects, significant heights the pangolin might fall from).



▲ **Image 19:** Curled up pangolin being carried using safe handling method.

© Kadoorie Farm & Botanic Garden.



▲ **Image 20:** Partially curled up pangolin being carried using safe handling method.

© Elisa Panjang.

Continued: Box 2. Safely handling the pangolin

If the pangolin is curled up:

1. Place one hand firmly on the pangolin's tail, about 5-10 cm from the base – this will prevent the pangolin from thrashing its tail, which may cause injury to the pangolin or handler. Place the other hand on the opposite side of the pangolin (see **Image 19**).
2. Pick the pangolin up by holding it firmly with both hands, like a ball.
3. Carry the pangolin to the destination using calm and slow movements. Quick and jerky movements may cause the pangolin to become stressed and thrash about.
4. If the pangolin becomes active whilst being handled or lifted, do not drop it. Place it down carefully on a stable surface, block any potential escape routes and allow the pangolin to calm down. See the advice below for active pangolins.
5. At the destination, place the pangolin slowly and carefully down. Do not drop it from any height.

If the pangolin is awake, active and not curled up:

Smaller pangolin species, such as the white-bellied pangolin (see **Part 3 for an identification guide**), or infant or juvenile pangolins (see **Box 1**) can be held using two hands when active and not curled up. Place one hand at the base of the pangolin's tail and use the other hand to support its back, as in **Image 20**.

Alternatively, for larger pangolin species or pangolins that are too active to be carried safely, try wrapping the pangolin in a thick cloth, such as a blanket or towel, which the pangolin can curl up in. This may make the pangolin easier to carry. Alternatively, block any potential escape routes and allow the pangolin to adjust to its surroundings before moving it.

If the pangolin is highly distressed:

Be aware that the pangolin may be highly distressed following confiscation and may thrash about. In this situation, block any escape routes and do not attempt to move the pangolin as this may cause injury to the handler and the pangolin, especially if dropped. It is important to note that pangolins are very strong, and their scales are very sharp.

Instead allow the pangolin to calm down and adjust to its new surroundings before attempting to move it. Try wrapping the pangolin in a towel or blanket. This provides protection, darkness and a cocoon-like feeling for the animal, helping to minimise stress and calm the pangolin down. Once it has calmed down, it can be safely moved using the instructions above.

Step 3: Prepare the pangolin for next steps

After removing the constraints, place the pangolin in a suitable holding container. This section gives instructions for creating a holding container. This container can also be used as a transport container for transferring the pangolin to a care facility, and as a resting place in the interim period.

Remember: It is illegal to possess and/or transport pangolins within most countries, and across borders between countries. Seek advice from relevant local wildlife or law enforcement agencies or ask the care provider you have contacted for further advice on local and national restrictions on possessing and transporting pangolins.



A. Place the holding container in a suitable holding place

The holding container should be kept in a holding place, such as a quiet, dark room or area. The quiet area you have transported the pangolin to may already be adequate, however there are additional requirements to consider. The holding place should be well-ventilated, preferably using a fan, but an air conditioning unit or open window are also suitable if a fan is not available. If using an air conditioning unit for ventilation, do not place the holding container directly next to the unit, in the flow of air. Similarly, if using a window for ventilation, ensure the pangolin is unable to climb up to an open window. Remember that most pangolin species are excellent and fast climbers. Remove any objects or furniture the pangolin might climb up to reach the window.

The holding place should also be protected from weather, including strong wind, rain and direct sunlight. A blanket can be used to cover the holding container to block direct sunlight and/or to create darkness inside the holding container during the day. However, ensure the blanket does not prevent air from getting in the holding container. Additionally, make sure the holding place is secure to prevent the pangolin from escaping. For example, close and lock any doors and windows (unless another ventilation source is not available) and block any other potential escape routes, such as large drainage pipes.

Remember: Stress can be caused or worsened by the presence, sounds and smells of humans and other animals. It is vital to reduce stress to the pangolin by limiting human disturbance within the holding place and near the holding container, such as telephones ringing, doors slamming, and loud voices.



B. Offer the pangolin water

Once the pangolin is in a holding container and within a suitable holding place, it is very important to offer the pangolin fresh, clean water. Pangolins seized from illegal trade will almost certainly be dehydrated. Dehydration can worsen ill health and can be fatal.

Provide room temperature water in a bowl and place it within the holding container. Only half fill the bowl to prevent spillage and use a heavy rock, brick or similar, to weigh it down (**see Image 21**). This will prevent the pangolin tipping the bowl over.

If the holding container is not large enough to contain the water bowl, place it just outside of the container and allow the pangolin regular access. Provide the pangolin with access to the water every 3-4 hours. The water should be replenished at this stage as well – see below for more information on checking on the pangolin.



▲ **Image 21:** Water bowl weighed down by brick to prevent it from tipping over. © Kadoorie Farm and Botanic Garden.

What to do if water cannot be provided or the pangolin is refusing water:



If a water bowl cannot be provided or if the pangolin will not accept the water, place a moistened or damp towel or cloth over the pangolin to cool it down and provide some hydration through increased humidity.

C. Check on the pangolin regularly

Once the pangolin is in a suitable holding container within a quiet, dark holding place and it has been offered water, it should be left to rest without disturbance whilst waiting for the next step – either for the care provider to arrive or for transfer to a longer-term care facility.

However, the pangolin should be checked on in its holding container frequently. The frequency depends on the health condition of the pangolin, but ideally, it should be checked on every 3-4 hours. If the pangolin is in a critical condition (e.g. it has significant wounds or injuries) or if dealing with a mother and offspring pair, seek advice from the care provider you have already contacted on how often it should be checked on and what actions need to be taken. You should have already contacted a care provider to arrange veterinary care or placement in a longer-term care facility. If you have not already done this, contact a care provider in the directory in **Part 4**.

When checking on the pangolin, avoid disturbing or being very close to it - for example, touching it or creating noise - as this may cause unnecessary stress. Instead, complete the following checklist:

1. Check the pangolin is still present inside the holding container.
2. Make sure there is no damage to the holding container; repair or replace it, if needed.
3. Replenish the water bowl so it is half-full, if needed.
4. If the pangolin is awake and active, allow the pangolin access to the water bowl, if the bowl is not already inside the holding container.

Checks should continue overnight if possible, as all but one pangolin species is nocturnal, meaning they are active at night. However, it is recognised that overnight checks may not be possible for first responders. If overnight checks are not possible, check on the pangolin as late as possible in the evening and then again as early as possible the following morning.

D. Prepare the pangolin for transportation

The confiscated pangolin should be transported to a veterinarian or longer-term care facility as soon as possible. However, it is important that transportation does not cause further harm or distress to the pangolin. The following guidance will help prepare the pangolin for transportation and minimise stress during the journey.

If you have followed the guidance in this section, the pangolin can be transported in its holding container. Ask the care provider that the pangolin is being transferred to for further guidance on how the pangolin should be transported. They may also be able to provide a transport container if none is available.

If as the first responder, you need to prepare the pangolin for transportation or transport the pangolin to a care provider, consider the points listed in **Table 1** before and during the journey.

Warning: It is illegal to possess and/or transport pangolins within most countries, and across borders between countries. Seek advice from relevant local wildlife or law enforcement agencies or ask the care provider you have already contacted for further advice on local and national restrictions on possessing and transporting pangolins.



Additionally, do not remove an infant or juvenile pangolin from its mother, if present. A mother and its offspring should be transported together in the same holding container. See **Box 2** for ways to identify mother and offspring pairs.

▼ **Table 1. Checklist of actions to complete before and during transportation of the pangolin**

Before starting the journey:	During the journey:
<p><input checked="" type="checkbox"/> Ensure good ventilation: Make sure the air holes in the holding container are not covered when the pangolin is being transported. For example, by other holding containers if transporting multiple pangolins.</p>	<p><input checked="" type="checkbox"/> Check on the pangolin: Two people should preferably accompany the pangolin during transportation. For example, if the pangolin is being transported by car, one person should drive, whilst the second remains close to the pangolin’s holding container to check on it.</p>
<p><input checked="" type="checkbox"/> Secure the holding container: Use additional strapping to securely close doors and lids and prevent the pangolin from escaping during transfer. Place the holding container within the transport vehicle so that it can be easily accessed. Ensure at least one first responder accompanying the pangolin during transportation can hear any activity inside the holding container and can easily look inside it to check on the pangolin. Try to cushion the holding container in the transport vehicle so it does not move during transportation.</p>	<p><input checked="" type="checkbox"/> Provide water: For a journey of less than five hours, offer the pangolin water before starting off and on arrival at the destination. For a journey of more than five hours, offer the pangolin water before starting the journey and then stop to check on the pangolin every 4-5 hours during the journey to offer water.</p> <p><i>Please note: Animals generally do not drink during transportation. Therefore, do not leave a water bowl in the holding container during the journey in case of spillage. Stop and offer the pangolin water at the intervals above. Water requirements depend on the pangolin species and its health condition. Consult with the care provider you have already contacted for further advice on how often to check on the pangolin during a journey.</i></p>
<p><input checked="" type="checkbox"/> Keep out of direct sunlight: Ensure the holding container is not placed in direct sunlight to prevent the container from overheating during transportation. A blanket can be used to block the sunlight being sure not to block any airholes.</p>	<p><input checked="" type="checkbox"/> Check the position of the holding container: Rough journeys or uneven road surfaces may mean the holding container moves during transportation, causing stress to the pangolin. Correct the position of the holding container if it has moved and secure it in place again.</p>
<p><input checked="" type="checkbox"/> Provide water: Offer the pangolin water before beginning the journey. In very hot conditions, wrap a damp cloth or towel around the pangolin’s body to help cool and hydrate it.</p>	<p><input checked="" type="checkbox"/> Reduce stress to the pangolin: Minimise noise around the transport container to reduce stress to the pangolin.</p>

Part 2: Further steps for first responders

▼ Philippine pangolin (*Manis culionensis*) © Roger Dolorosa



Further steps for first responders

It is vital to transport the pangolin to a veterinarian or care facility as soon as possible. However, if emergency care cannot be provided, or longer-term placement cannot be arranged within 1–2 days of the pangolin being confiscated, the pangolin will need to be cared for adequately in the intervening period. Steps 4–6 will help first responders to provide this care. These steps should be followed after completing the steps in Part 1.

In this interim period, the priority is to move the pangolin into a cool, dark and quiet space to prevent its health from deteriorating or deteriorating further, where it can rest, stretch out and exercise undisturbed. This will help improve the pangolin's chance of survival while waiting for a longer-term solution. The following guidance on immediate provisions for confiscated pangolins is therefore applicable in the short-term only, i.e., a period of a few days to a week, maximum.

If veterinary care cannot be provided or placement at a longer-term care facility is not available, information is provided at the end of this section for alternative long-term management options.

Steps to provide short-term care

These steps include and should be implemented in the following order (after steps 1-3 outlined in Part 1):

4. Prevent deteriorating health

5. Provide a suitable safe space

6. Offer a food source

These steps should help to prevent further deterioration of the pangolin's health whilst waiting for emergency care and for the pangolin to be transferred to a care facility for longer-term placement. This section describes best practice, recognising that it may not be possible to follow these steps exactly in all circumstances.

Warning: It is illegal to possess and/or transport pangolins within most countries, and across borders between countries. Seek advice from relevant local wildlife or law enforcement agencies or ask the care provider you have contacted for further advice on local and national restrictions on possessing and transporting pangolins.



Step 4: Prevent deteriorating health

On confiscation, it is highly likely that the pangolin will be dehydrated, stressed, and may have minor or major injuries. A combination of dehydration, lack of food, and other injuries, combined with a susceptibility to stress can quickly lead to other health issues, and even death. Even if the pangolin is showing no signs of stress or critical condition, to give it the best chance of survival measures should be taken to offer water, reduce stress, prevent deteriorating health and allow the pangolin to rest without disturbance.

Use **Table 2** to determine whether the confiscated pangolin presents with any common health conditions and if it does, follow the recommendations to prevent its health from deteriorating further.

Please Note: It is not the responsibility of the first responder to administer veterinary care, unless they are a veterinarian or trained professional. However, the measures in **Table 2** may help to prevent worsening health and minimise stress to the pangolin.



Many of the symptoms in **Table 2** are indicative of multiple conditions. Consult one of the care providers based in your country in the directory in **Part 4** for further guidance on prevent deteriorating health while waiting for emergency or longer-term care.

▼ **Table 2. Signs of common health issues in confiscated pangolins and recommendations to prevent deteriorating health**

If the pangolin is...	It may be...	Therefore...
<ul style="list-style-type: none"> • Bleeding heavily from deep cuts or tears in its skin. • Unable to stand on a certain limb or limb is abnormal (for example, bent at an odd angle or very limp). • Missing a limb(s) and/or tail. • Unresponsive (not curling up in response to touch or sound and lying on its side or belly). • Having difficulty standing, walking, using its tail or curling up. • Pale and grey in skin colour. • Will not eat or drink water. 	Critically injured	<ol style="list-style-type: none"> 1. Contact a veterinarian or trained professional to administer emergency care immediately. 2. In the meantime, apply pressure to a wound area if actively bleeding. 3. Wrap the injured pangolin in thick clean towels and place it a holding container using instructions in Box 4. 4. Keep the holding container in a suitable holding place that is dark or dimly lit. Alternatively, keep the holding container dark by keeping the lid on but making sure it has air holes, or placing a blanket over the container. 5. Ensure the pangolin has access to water.
<ul style="list-style-type: none"> • Weak and not curling up. • Not very active or alert. 	Dehydrated	<ol style="list-style-type: none"> 1. Contact a veterinarian or trained professional to administer emergency care immediately. 2. Ensure the pangolin always has access to water. 3. Mist the pangolin with water or wrap it in a damp towel or blanket to hydrate it by creating some humidity.
<ul style="list-style-type: none"> • Curled up tightly and remaining this way for a long period of time. • Not very active or alert. • Showing frenzied activity, such as clawing at mesh or walls. • Walking in repetitive circuits of the safe space. • Has an abnormal body temperature, e.g. the skin on the belly is cold or hot to the touch. • Shaking. 	Stressed	<ol style="list-style-type: none"> 1. Keep disturbance to a minimum. For example, limit the number of people near the pangolin to as few as possible, and speak quietly if near the pangolin. 2. Make sure the holding container is lined with a towel or blanket that the pangolin can bury itself in. See Box 4. 3. If the safe space is bright, create darkness or dimness in the holding container by covering it with a blanket, making sure the pangolin still receives enough air.
<ul style="list-style-type: none"> • Shivering. • Cold to the touch on the skin. 	Too cold	<ol style="list-style-type: none"> 1. Provide extra bedding for additional warmth, such as an extra blanket or towel. 2. Provide heat source according to the instructions in Figure 1 and make sure it is replenished frequently (every 1-2 hours). 3. Ensure the pangolin can move closer to the heat source if needed.
<ul style="list-style-type: none"> • Restless or agitated. • Urinating frequently on itself. 	Too hot	<ol style="list-style-type: none"> 1. Make sure the pangolin is not in direct sunlight and place it in a shaded area. 2. Provide good ventilation using a fan or air conditioning. 3. Ensure the pangolin always has access to water. 4. Wet the pangolin with room temperature water or wrap the pangolin in a damp towel or blanket to cool it down.

Step 5: Provide a suitable safe space

While waiting for emergency care or a longer-term placement to be arranged, the priority is to move the pangolin into a suitable quiet, dark and safe space to prevent its health from deteriorating or deteriorating further. This will help the pangolin's chance of survival while identifying or waiting for a longer-term solution.

Subject to circumstances, first responders have two options on the next step:

- 1. Keep the pangolin in its holding container and walk it at least once a day.**
- 2. Provide a suitable safe space (see 'A. Creating a safe space' for more information).**

These circumstances include availability of space, first responder's experience of dealing with pangolins, the species of the confiscated pangolin, and the provision of expertise from experts in **Section 4**. Use Table 3, as well as advice from the experts, to help you decide which option to take.

When adopting **Option 1**, the pangolin should be checked on in its holding container every 3-4 hours, following the guidance in **Box 9**. The pangolin must be walked at least once a day so it can feed, get exercise, urinate and defecate. Walking the pangolin may also help relieve stress by allowing the pangolin to behave naturally. See **Step 6** for more information. Please note that Temminck's pangolins will only feed through natural foraging. This species can be left in their holding container and walked at least once a day for exercise and to feed. See **Step 6** for more information.

▼ **Table 3. Checklist to determine which short-term holding option is appropriate for the confiscated pangolin(s).**

Keep the pangolin in its holding container if...	Provide a safe space if...
<input checked="" type="checkbox"/> As a first responder, you have very limited or no experience caring for confiscated pangolins or other wildlife.	<input checked="" type="checkbox"/> As a first responder, you have some experience dealing with pangolins and other confiscated wildlife.
<input checked="" type="checkbox"/> The pangolin is a species that will only feed by naturally foraging outside (Temminck's pangolin). See Step 6 and the identification guide in Part 3 for more information.	<input checked="" type="checkbox"/> There are plenty of resources available to care for the pangolin. For example, there is a whole room that can be dedicated to the pangolin, and suitable substrates are available (e.g. logs, leaf litter) to provide enrichment materials.
<input checked="" type="checkbox"/> The resources available (e.g. space, materials) are very limited. For example, there is not a whole room available to create a safe space.	<input checked="" type="checkbox"/> The pangolin is a species that often accepts ants and termites provided to them in their holding container or safe space. See Step 6 .
<input checked="" type="checkbox"/> A suitable area is available and accessible to walk the pangolin. See Step 6 for more information.	<input checked="" type="checkbox"/> An area suitable for walking the pangolin is not available or is inaccessible.

A. Creating a safe space

The safe space will be similar to the holding place described in **Part 1**, but it differs in that it will ideally be a room dedicated to the pangolin where it is free to move in and out of the holding container. Avoid using wire or mesh cages as a safe space, if possible. Pangolins have injured themselves, particularly their forelimbs, by clawing at mesh cages. There is also a risk the pangolin may climb the mesh and fall. The safe space should also contain a heat source and may contain a specialised feeding bowl. Instructions for creating these are provided in this section.

Image 22 shows an example of a safe space for pangolins kept in longer-term care prior to release back into the wild. It is recognised that it may not be possible for the first responder to deliver this standard of care, but the safe space should aim to replicate this example, using the available resources.



▲ **Image 22:** Typical safe space for longer-term captivity of pangolins. © Kadoorie Farm and Botanic Garden.

To create a safe space:

- 1. Find a quiet, dark and secure room:** Find a quiet, adequately sized room that can be kept dim or dark with a secure door to prevent the pangolin from escaping. Preferably, a minimum size of 2 x 2.5 x 2 m, so that the animal has room to move around and there is enough space for the holding container, a heat source and if needed, a feeding area to provision ants and termites.
- 2. Protect the room from weather:** Ensure the room is sheltered from direct sunlight, wind and rain, but well-ventilated. If ventilation is lacking, use a fan or air conditioning. Alternatively open a window, however be aware of potential escape routes and ensure the pangolin cannot climb up to and out of the window.
- 3. Replicate the pangolin's natural environment:** If possible, line the floor with leaf litter or straw, and add tree branches or logs in the safe space to replicate the pangolin's natural environment, which may help to reduce stress.
- 4. Allow the pangolin to move between the holding container:** Once a space has been identified and made safe (see **Box 3** for further guidance), place the holding container within it and leave the door or lid open so the pangolin can move between the container and the wider space.
- 5. Minimise stress:** Keep the room quiet and limit the number of people entering the safe space to reduce stress to the pangolin.
- 6. Check on the pangolin:** Allow the pangolin to rest here undisturbed except for necessary checks on the pangolin, according to guidance in **Box 6**.

Be aware: Pangolins are very strong and are escape artists. They can easily break through weaker materials (e.g., weak concrete), climb furniture and other objects in the room, dig through natural flooring, or hide in small places. **Box 3** outlines safety measures to prevent the pangolin injuring itself or escaping from the safe space.



What to do if a whole room is not available to create a safe space:



If a whole room is not available, a makeshift safe space can be created using temporary barriers into which the holding container, heat source and feeding containers can be placed. The barriers can be made of hard plastic, wood or iron, provided they have a smooth surface and that their height is more than twice the length of a pangolin's body (including its tail) and that they are strong enough that the pangolin's claws cannot break through.

However, this method should only be used if nothing else is available as pangolins can often break free and escape from makeshift cages and enclosures like this. It may be successful in containing some smaller species, but unsuitable for other species, particularly larger species. Therefore, consult with the care provider you have already contacted for further instructions and other alternatives if a room is not available for the pangolin.

Additionally, pangolins are solitary animals and therefore if multiple pangolins are confiscated, they should ideally be kept in separate safe spaces. However, if this is not possible, temporarily keeping more than one pangolin in the same safe space is acceptable until a more suitable space for individual animals can be found. If this scenario occurs, provide a separate holding container for each pangolin or mother-offspring pair, and consider using temporary barriers to separate the holding containers within the same safe space.

Box 3. Safety within a safe space when temporarily keeping a pangolin

Pangolins are very strong and will often attempt to escape from holding places, which may lead to injury. The following measures should be followed to make the space as safe and secure as possible:

1. Keep all light fixtures, wires and plumbing out of reach of the pangolin – noting that most pangolin species can climb and extend their tongue the length of their own body, beyond a holding container.
2. Remove furniture from the room, or if this is not possible, position furniture in the safe space so that it limits injury risk – the pangolin should easily be able to pass between items of furniture without getting stuck – and remove items that the pangolin might climb, such as shelving units.
3. Ideally ensure the walls and floor of the safe space are smooth so the pangolin cannot climb the walls or injure itself when moving around.
4. Position items (e.g. holding container) in the safe space so that it can be easily cleaned and so the pangolin can be handled when necessary.
5. Pangolins are still at risk of illegal trade even when confiscated, so the safe space should be secure; for example, the doors and windows should be kept locked and the space should be checked regularly.

B. Provide a heat source and good ventilation

Pangolins are sensitive to temperature change, which can cause or worsen health problems. It is recognised that regulating the temperature of the safe space may be beyond the resources available to a first responder. However, a heat source can be created to allow the pangolin to regulate its own temperature using the instructions in **Figure 1**.

If the safe space is particularly cold to a pangolin (i.e., less than 18°C/64°F), place an additional towel or blanket in the pangolin's holding container. If the space is particularly warm (more than 30°C/86°F), place the heat source further away from the pangolin, or provide extra ventilation such as a fan.

▼ **Figure 1. Instructions for creating a heat source for the pangolin**



1. Select heat source.

This can be:

- Water bottle filled with warm (not boiling) water,
- Hot water bottle
- Heat pad, or
- Hot brick

2. Wrap the heat source in a bowl or blanket.

3. Place the heat source into the holding container, if space, or alternatively, put next to the container but within safe space.

Note: Check the heat source regularly, ideally every 3-4 hours, to make sure it is still warm. Replace or replenish it as needed so it does not become cool.

Allow the pangolin to control its own temperature: It is important that the pangolin can move closer to or further from a heat or ventilation source to help regulate its own temperature. For example, if using air conditioning to ventilate the safe space, ensure the pangolin is not in the direct line of the air conditioning unit. Similarly, ensure the heat source is positioned with enough space around it for the pangolin to move away should it become too warm.



It is also important to make sure that an infant or juvenile pangolin without its mother is warm enough at night, even in tropical environments. A heat source and additional bedding should be placed in the holding container. The heat source should be checked every two hours to ensure it is still warm, especially at night when the temperature may drop, such as during the monsoon seasons.

Step 6: Offer water and a food source

Pangolins confiscated from illegal trade are highly likely to be severely dehydrated and to have been without food for a prolonged period. It is common for a pangolin to not eat for the first 24-28 hours after confiscation due to stress. However, once stress levels have been reduced, it is important if keeping the pangolin for more than 2 days and up to one week to offer food. This section provides instructions on how to feed a pangolin being temporarily cared for whilst awaiting longer-term placement.

Every effort should be made to offer the pangolin food if it cannot be immediately transferred to a veterinarian or care facility within 1-2 days. However, it is recognised that providing this natural diet may be difficult and, in some scenarios, impossible. Pangolins have a specialist diet and are prey selective, so will often refuse unsuitable food. Similarly, there may not be an area suitable for natural foraging. In these situations, at the very least, water should be offered.

Please note: It is vital to provide the pangolin with water as soon as it has been transferred to a safe space. If you have not already offered the pangolin water, offer it immediately by filling a bowl half full of water and placing it near the pangolin's holding container, using a rock to weigh it down and prevent the pangolin tipping it over. See **Step 3** for further instructions on providing water for the pangolin.



Providing a natural diet

In the wild, pangolins feed on ants and termites, therefore where possible, you should feed the pangolin live ants or termites. There are two ways to provide the pangolin with a natural diet. Use **Table 4** to decide which option to use after reading through the following guidance:

1. Natural foraging for prey

Food can be provided for all pangolin species in this way – both ground-dwelling species, such as the giant pangolin, and arboreal or semi-arboreal species, such as the black-bellied pangolin. See **Part 3** for more information on identifying pangolin species. To allow the pangolin to naturally forage:

- 1. Select a suitable site:** A suitable site for the pangolin to forage in will be a quiet and secluded area, without human disturbance, containing ant nests or termite mounds.
- 2. Bring the appropriate equipment:** If allowing the pangolin to forage during the late afternoon or early evening when light levels are low, bring a torch to help illuminate the pangolin and its surroundings. Wear thick gloves in case the pangolin needs to be handled.
- 3. Transport the pangolin to the foraging area:** Transport the pangolin in its holding container, taking care to lift it slowly and gently. If a transport vehicle is needed, refer to the instructions on transportation in **Step 3**.

4. Allow the pangolin to naturally forage: Gently lift the pangolin out of its holding container using the instructions in **Box 1**. For ground-dwelling species, let the pangolin roam near ant hills to naturally forage for prey and feed. Arboreal (meaning tree-dwelling) or semi-arboreal species can forage at the base of trees, on low branches or ant nests hanging close to the ground.

5. Monitor the pangolin closely: It is important to note that pangolins can climb quickly and to significant heights, therefore closely monitor the pangolin to see whether it is actively foraging and eating, and importantly, to ensure that it can be recaptured. Always walk within two metres of the pangolin, and if it is dark or dim outside, use a torch to illuminate the pangolin and its surroundings.

Some pangolin species will only feed by way of natural foraging. Confiscated Temminck's pangolins must be walked every day for 3-4 hours to forage once they are awake, which may be mid-afternoon to early evening. The recommended feeding times and frequencies for each pangolin species are summarised in **Table 5**. See **Part 3** for a guide to identifying pangolin species.

How to monitor the pangolin whilst naturally foraging:



Pangolins can move and climb to significant heights very quickly, depending on their health condition. When walking the pangolin to allow it to naturally forage, monitor it closely to prevent it from escaping and ensure recapture is possible.

To do this, always walk within two metres of the pangolin. If it is dark outside, bring a torch to illuminate the pangolin and its surroundings. Often a pangolin's natural response when being walked will be to hide in small spaces. Be aware of any holes, burrows or crevices between tree roots in the vicinity, as the pangolin, if healthy, may try to escape into these and will be difficult to recapture.



▲ **Image 23:** Juvenile white-bellied pangolin feeding from an ant nest. © Liberia Chimpanzee Rescue & Protection.

2. Place ant nests or termite mounds within the pangolin's safe space

In some situations, it will not be feasible to let the pangolin naturally forage for prey, either because there are no suitable sites, it is unsafe to do so, or there is a high risk the pangolin cannot be recaptured. Instead, ant nests or termite mounds can be placed in the pangolin's safe space, either hanging from a branch or on the floor, close to its holding container⁵.

Pangolins are prey selective, meaning they will only feed on certain species of ants and termites, so there is no guarantee they will eat the prey offered to them. However, if keeping the pangolin for up to seven days, it is important to offer food.

To provide ants or termites for the pangolin:

- 1. Collect prey from the ground:** Ant nests and termite mounds on the ground can be lifted from the ground using a large spade and placed in a plastic bag, large sack or wheelbarrow to be put in the safe space. Termite mounds on the ground can be partly broken and a piece of the mound can be placed in the pangolin's safe space (see **Image 23**). Termites may also be found in rotten logs, which can be placed in the safe space.
- 2. Alternatively, collect prey from trees:** To collect live ants from trees it is necessary to climb trees to remove entire leaf-nests containing ants and place them in large plastic sacks. Some care providers have collected ants from nests using a bamboo stick pierced through the centre of a basket; the ant nests is broken open and ants drop inside the basket, which is transferred to a bag and then placed in the pangolin's safe space. Please note that ants bite so collectors should consider wearing protective clothing.

3. Place the prey in the pangolin's safe space: Ant nests, whole or parts of termite mounds, or rotten logs containing termites can be placed in the safe space for the pangolin to feed on. If resources allow, a specialised feeding bowl can be made to prevent live ants from escaping. **Box 4** provides instructions to create a specialised feeding bowl. Sunda pangolins have been successful fed using these.

4. Collect any refuse the next morning: Leave the prey in the pangolin's safe space overnight to avoid disturbing the pangolin again. Remove the refuse the next morning and store any remaining prey in a sealed bag.

Feeding times:

Except for black-bellied pangolins, which are active by day, the pangolin should be walked once a day to feed or should be provided with ants or termites once it wakes up, which is likely to be in the late afternoon or early evening, between about 4–6pm. When walking the pangolin, the duration depends on the pangolin species and the availability of prey.

For example, if few ant nests or termite mounds are available, Temminck's pangolins can feed for up to 6 hours. However, 2–3 hours should be long enough in most cases for the pangolin to feed.

Table 5 gives more specific guidance for each species. **Part 3** contains a species identification guide to aid this process.

Box 4. Creating a specialised feeding bowl

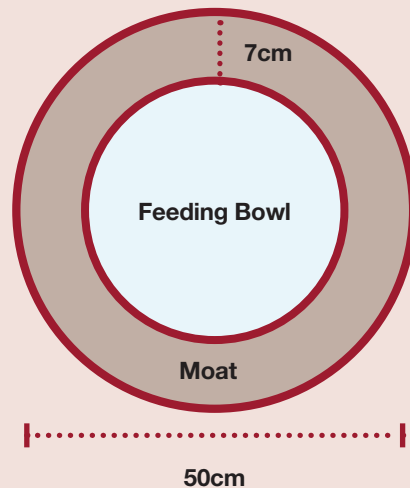
The special feeding bowl can be used to provide live ants.

To create one:

1. Use a large bowl (preferably concrete or stainless-steel) and half fill it with water. The suggested size of the special feeding bowl is 50 cm in length and 15 cm in height⁵.
2. Place a second smaller bowl inside this to create a moat to prevent the ants escaping. The suggested size of the moat is 7 cm in width and 2 cm in depth⁵.
3. Place the live ants inside the smaller bowl so the pangolin can feed.

Tip: This specialised feeding bowl can be created using a large dog bowl and a basin of water.

Example of a live ant feeding station



Safety risks in walking the pangolin after dark:



Consider the safety risks involved, for both the walker and pangolin, in walking the pangolin late at night and/or when it is dark. Ideally, more than one person should accompany the pangolin. If there are safety concerns, do not walk the pangolin and if possible, provision it with ants in its safe space.

Caring for an infant or juvenile pangolin:



If caring for an infant or juvenile pangolin, particularly if its mother *is not* present, ask for advice on feeding from the care provider that you have contacted. Infant pangolins still rely on their mothers for milk so if the mother is absent or unable to feed the infant, it will need to be hand reared.

▼ Table 4. Checklist to determine which feeding option is most appropriate for the confiscated pangolin(s).

Allow to forage naturally if...	Feed in the safe space if...
<input checked="" type="checkbox"/> There is a quiet, secluded place for the pangolin to forage, free from human disturbance.	<input checked="" type="checkbox"/> There are no suitable or accessible sites for the pangolin to forage in.
<input checked="" type="checkbox"/> There are plenty of ant nests or termite mounds available.	<input checked="" type="checkbox"/> There is a high risk that the pangolin cannot be easily re-captured if foraging naturally.
<input checked="" type="checkbox"/> The confiscated pangolin is ground-dwelling (see Part 3 for a basic identification guide).	<input checked="" type="checkbox"/> The confiscated pangolin is arboreal or semi-arboreal (see Part 3 for an identification guide).
<input checked="" type="checkbox"/> The pangolin can be supervised at all times.	<input checked="" type="checkbox"/> The pangolin will not feed through natural foraging.

Alternatives to a natural diet

If it is not possible to provide the pangolin with a natural diet – either because there is no suitable area for the pangolin to forage, there is nowhere to obtain ant nests or termite mounds, or the pangolin is refusing all food offered – then alternatives to the pangolin’s natural prey can be considered.

Some pangolins in longer-term care facilities have accepted the following as alternatives to their natural prey:

- Red weaver ants and their eggs
- Frozen ants
- Live or frozen mealworms
- Raw or boiled chicken eggs
- Tinned cat food, mango and avocado
- A blend of apple, dog biscuit, milk powder and water

Alternatives can be offered to the pangolin but will likely be refused as pangolins are prey selective. However, when keeping a pangolin for more than 1-2 days and if natural foraging is not possible, offering an alternative is preferable over not offering any food at all. The alternative option and its success will depend on the context of each individual confiscation scenario and the pangolin itself. Therefore, before offering any alternatives to the pangolin, consult with one of the care providers with expertise in caring for pangolins from the directory in **Part 4**.

▼ **Table 5. Recommended feeding methods, frequencies and durations for each pangolin species based on experience of pangolins in longer-term captive care**

Pangolin species		Feeding method	Feeding frequency	Feeding duration
Asian	Chinese pangolin	Provision ants or termites in the safe space.	Once a day, between 6-10pm.	Leave overnight.
	Indian pangolin	Provision ants or termites in the safe space.	Once a day, between 4-6pm.	Leave overnight.
	Philippine pangolin	Walk to forage naturally or provision ants or termites in the safe space.	Once a day, between 6-9pm.	If walking, 1 hour. If providing food, leave overnight.
	Sunda pangolin	Provision ants or termites in the safe space.	Once a day, between 6-10pm.	Leave overnight.
African	Giant pangolin*	-	-	-
	Temminck’s pangolin	Walk to forage naturally.	Once a day, preferably in the early evening from 4-7pm.	3-4 hours
	White-bellied pangolin	Walk to forage naturally.	Twice a day, early in the morning and in the evening; for example, starting between 4-5am and again at 5-7pm.	2-3 hours
	Black-bellied pangolin	Walk to forage naturally.	Twice a day, in the morning and afternoon; for example, starting between 9-11am and again at 3-5pm.	2-3 hours

* Advice for the giant pangolin is currently unknown. If potentially dealing with a giant pangolin, consult with the care provider for more specific guidance for this species.

Box 5. Weighing the pangolin to help monitor its health

First responders can provide important information to the care providers or relevant authorities who will be responsible for administering emergency care and deciding on the longer-term management of the pangolin. Weighing a pangolin is a good way of determining its health and monitoring it overtime.

If feasible and easy to do without causing stress to the pangolin, record the animal's weight upon confiscation and then try to weigh the pangolin once a day while waiting for emergency care or a longer-term placement. Unless it is a black-bellied pangolin, which is active during the day, the best time of day to weigh the pangolin is early in the morning when it is asleep. Consider weighing the pangolin at the same time as checking on it to avoid disturbing the pangolin multiple times.

If the pangolin is active, it may be easier to weigh the pangolin by placing it in a bag and using a hanging scale, if available. Alternatively, wait until it is less active and is curled up. Make a note of whether the pangolin is being weighed before or after feeding.

To weigh the pangolin:

1. Ensure the scales are placed on the ground or on a stable surface. If the pangolin is curled up, place it onto the scales to weigh it (**Image 24**). It may be easier to weigh the pangolin by placing it in a container such as a plastic box, bowl or bucket.
2. Place the container on a digital scale to weigh the individual and record the total weight (preferably, in grams or kilograms).
3. Alternatively, the pangolin can be placed in a large sack and weighed using luggage scales.
4. Immediately remove the pangolin from the weighing container and return it to its holding container.
5. If using a container, record the weight of the container used to weigh the pangolin.
6. Calculate the pangolin's weight by subtracting the weight of the container from the total weight.

Record the pangolin's weight on the day of confiscation and subsequent days and compare the weight of the pangolin to the first weight recorded. If the pangolin's weight remains stable or increases, the pangolin's health is likely to be stable. If the pangolin's weight is decreasing, its health is likely deteriorating.



▲ **Image 24:** Chinese pangolin weighed on digital scale. © Tulshi Laxmi Suwal.

Box 6. Checking on the pangolin

When keeping the pangolin for more than 2 days, use **Table 6** to check on the pangolin. The actions listed will help to minimise stress and prevent deteriorating health.

▼ **Table 6. Checklist of actions to complete whilst caring for the pangolin**

Every 3-4 hours:	Once a day:
<input checked="" type="checkbox"/> Replenish the water bowl so it is half full.	<input checked="" type="checkbox"/> Walk the pangolin so it can naturally forage for prey (refer to Table 5 for feeding recommendations for each species).
<input checked="" type="checkbox"/> Provide access to the water bowl, if not already available.	<input checked="" type="checkbox"/> Provide the pangolin with live ants (or a suitable alternative).
<input checked="" type="checkbox"/> Replenish the heat source, if necessary.	<input checked="" type="checkbox"/> Weigh the pangolin using the instructions in Box 5 . Ideally before and after feeding.
	<input checked="" type="checkbox"/> Change the bedding in the holding container to a clean towel or blanket.

Options for confiscated pangolins

The information in this section is to inform decisions on the longer-term management of confiscated pangolin(s). In many cases, first responders will not need to take responsibility for the placement of confiscated animals: these decisions will be made by qualified professionals at longer-term captive-care facilities. However, in some circumstances, such as where no wildlife rescues centres exist, or following confiscation of a pangolin at the forest gate, first responders may need to make this decision. This decision should be made in consultation with the relevant wildlife and law enforcement agencies, and preferably, in consultation with individuals with expertise in the rescue, rehabilitation and release of pangolins, details of which are presented in Part 4.

The decision tree in **Figure 3** can aid this decision-making process. Steps highlighted in green can be completed by first responders. Steps highlighted in orange beneath the dashed line should only be completed by those with the authority to do so, such as relevant wildlife and law enforcement agencies in consultation with individuals with expertise in the rescue, rehabilitation and release of pangolins.

Given that all pangolin species are threatened with extinction, with some species listed as Endangered or Critically Endangered on the IUCN Red List of Threatened Species (see **Part 3** for more information), the goal of longer-term management of confiscated pangolins should be to minimise suffering and contribute to conservation. In an ideal scenario, a confiscated pangolin would receive prompt, expert veterinary care, respond to treatment, be successfully returned to health, and ultimately released back to the wild in its country and habitat of origin.

However, given the complexities of pangolin trafficking and care, this can be difficult to achieve. The ultimate fate of live pangolins confiscated from illegal trade will vary for a number of reasons, including the health of the animal, access to expert veterinary care, capacity for rehabilitation locally and nationally, and for legal and cultural reasons.

Common options for confiscated animals include releasing them back into the wild, repatriation (returning the individual to its country of origin), retaining them in captivity, and euthanasia^{6,7}. The correct option depends on multiple factors each of which requires explicit consideration.

1. Repatriation:

The animal can be returned to its country of origin if it can be identified, and it is safe and feasible to do so. Resources must be available in the country to appropriately care for or manage the animal, which ideally means rehabilitating the animal and returning it to the wild. However, this is a costly option and it is often difficult to trace the country of origin. For example, for confiscated pangolins it is difficult to identify the country of origin because all but one pangolin species occurs in multiple countries⁶.

2. Release back into the wild:

Release back into the wild is especially important for highly threatened species. As such, if a confiscated pangolin has received veterinary care, has been fully rehabilitated and experts can identify an appropriate release site within its country and habitat of origin, this option is preferred to maintain the population in the wild.

However, for many animals, release back into the wild can be difficult and there are several risks to consider. Risks include high mortality rates, disease transmission to wild populations, and genetic pollution, hybridization, and ecosystem disturbance if an animal is released far from their area of provenance⁶. Returning animals to the wild responsibly often requires a long-term commitment of time and resources to monitor the animal following its release to ensure the health of the individual and the wider ecosystem. Releases should be completed following relevant guidance, such as the IUCN Guidelines for Reintroductions and Other Conservation Translocations, and in consultation with experts (see **Part 4**).

3. Retain in captivity:

Confiscated pangolins should ideally be held in captivity in the short-term only. They should be quarantined, receive veterinary care and then be returned to the wild. However, long-term captivity is appropriate for animals that cannot be returned to the wild immediately or in the long-term. Scenarios where long-term captive

care is appropriate include when an animal is at an advanced age or stage of illness that makes survival in the wild highly unlikely, when the species of the animal is unknown so its natural habitat cannot be identified, when a species is under immediate threat in the wild (e.g. from hunting), or when there is a lack of available habitat, among other factors. Long-term captivity should be within appropriate facilities, such as rescue centres and zoos, that meet high standards of care. The directory in **Part 4** lists facilities known to the Pangolin Specialist Group with expertise in caring for pangolins.

Captive care can contribute to conservation by preserving species that are highly threatened with extinction that cannot be returned to the wild. Additional benefits include managed breeding, which may contribute to the wild population, or use in education and/or research projects. However, in selecting this option, consideration must be given to the lifetime care cost for given animals, which may be substantial and mean that less funding is available for other conservation projects. Other risks include disease transmission to other species and people.

4. Humane killing/euthanasia:

In some cases, humane killing of the animal may be the most appropriate option. For example, if the animal is suffering from a severe and untreatable illness or injury, if there are no captive care facilities or captive care is under very low standards of care, or release to the wild is unsafe or impossible. However, local laws should be considered before selecting this option as humane killing is forbidden in some countries and considered unacceptable in others for religious or ethical reasons. **Humane killing and euthanasia should only be selected if all other options have been explored in detail with appropriate experts and are deemed inappropriate⁶. The process itself must also be humane.** The AVMA guidelines for the euthanasia of animals can be used by veterinary professionals to guide this process and are available in English [here](#).

Further information

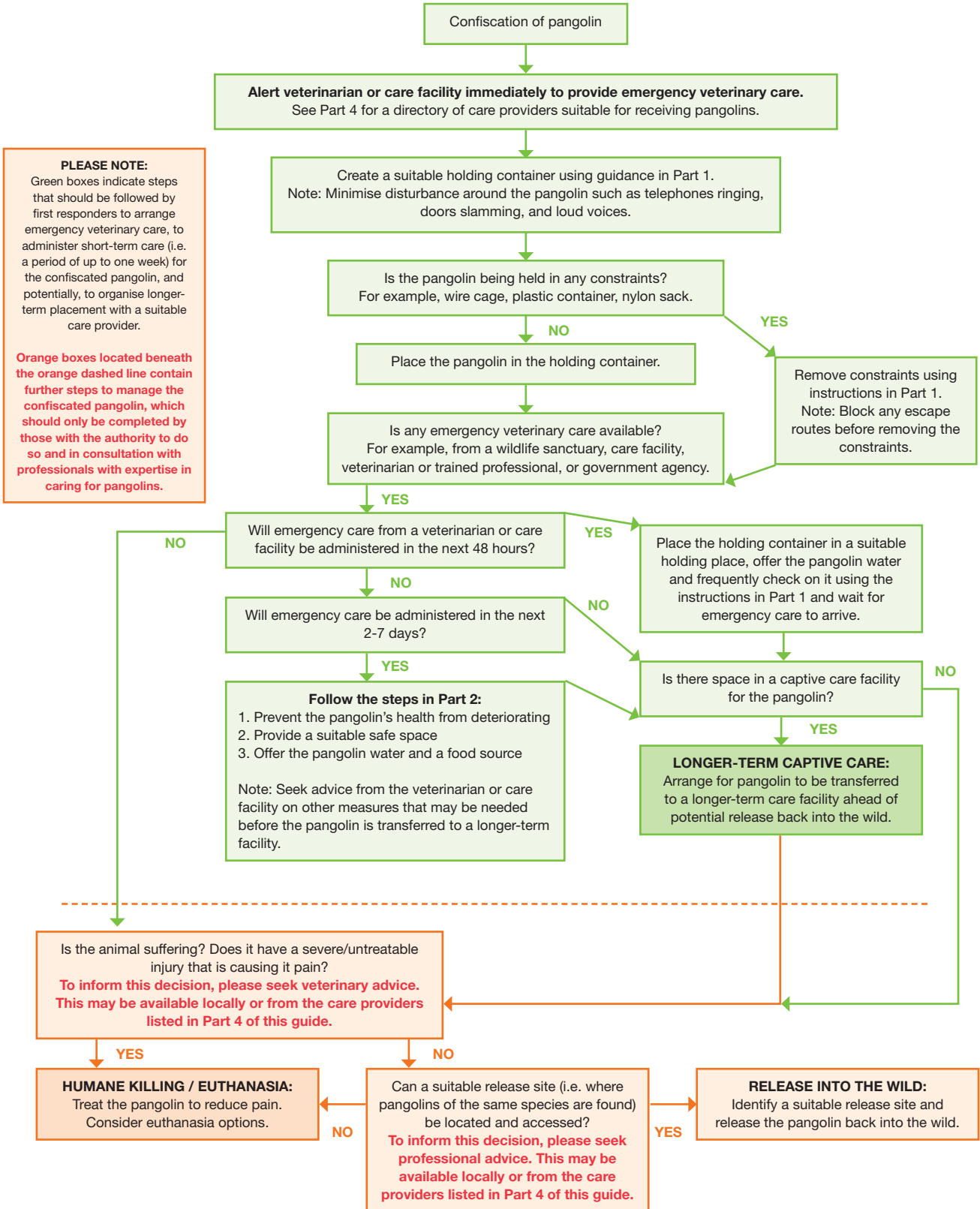
It is beyond the scope of this document to discuss management options in all the different contexts in which live pangolins of different species are confiscated in Africa and Asia. However, first responders and other stakeholders involved in confiscations are strongly encouraged to follow IUCN and CITES best practice guidelines on the management of confiscated live animals. Links to these documents are provided below. A list of longer-term care centres for pangolins in Africa and Asia is provided in **Part 4**.

- IUCN Guidelines for Reintroductions and Other Conservation Translocations (Available in [Chinese](#), [English](#), [French](#), [Portuguese](#), [Spanish](#) and [more](#))
- IUCN Guidelines for the management of confiscated, live organisms (Available in [Chinese](#), [English](#), [French](#) and [Spanish](#))
- CITES Res. Conf. 17.8, Disposal of illegally traded and confiscated specimens of CITES-listed species (Available in [English](#))
- AVMA guidelines for the euthanasia of animals (Available in [English](#))

Warning: It is vital to read the accompanying text for options for confiscated pangolins before using the decision tree in **Figure 2**. Decisions on the fate of pangolins confiscated from illegal trade that cannot be placed in long-term captive care should be made only following consultation with appropriate veterinary and/or professional care expertise. Such expertise may be available locally, while other appropriate experts are listed in **Part 4** of this guide.



▼ **Figure 2. Decision tree for the management of a confiscated pangolin**



Part 3: Further information

▼ Indian pangolin (*Manis crassicaudata*) © Gerald Cubitt



Information on pangolins

Pangolins (Pholidota: Manidae) are the world's only truly scaly mammals. There are eight species, four in Asia and four in Africa. All species are threatened with extinction being listed as Vulnerable, Endangered or Critically Endangered on the IUCN Red List⁸. The Asian species are the Chinese (*Manis pentadactyla*), Sunda (*Manis javanica*), Philippine (*Manis culionensis*) and Indian (*Manis crassicaudata*) pangolins, and the African species are the white-bellied (*Phataginus tricuspis*), black-bellied (*Phataginus tetradactyla*), giant (*Smutsia gigantea*) and Temminck's (*Smutsia temminckii*) pangolins.

All species of pangolin eat ants and termites, locating prey using their strong sense of smell, and using their claws to break into ant nests and termite mounds, and long tongue to lick up prey. Adult pangolins are solitary animals. Young typically stay with the mother for 3-6 months, clinging to her tail when outside of the burrow. Some pangolins species dig burrows using their powerful front claws. Others are arboreal or semi-arboreal, occupying tree hollows during the day. The black-bellied pangolin is unique as it is exclusively arboreal, resting and foraging in trees, and is active during the day.

All species are morphologically similar but can be differentiated by their size, weight, colour, scales, and tail length. Asian pangolin species have small hairs between their scales, whereas African species do not. The table in this section lists distinguishing features for each species to help identify them. **Images 25-28** can provide further help. For more information on pangolin identification, see the USAID Pangolin Species Identification and Reference Materials, available in multiple languages [here](#).

For additional help, ask the individual or care facility you have contacted for further advice (see the directory in **Part 4**). It may help to send a photo of the pangolin.

For more information on pangolins and their conservation, visit the Pangolin Specialist Group [website](#).



▲ **Image 25:** A white-bellied pangolin's scales with no hairs between scales.
© Liberia Chimpanzee Rescue & Protection.



▲ **Image 26:** An Indian pangolin scales showing hairs between scales. © Gerald Cubitt.



▲ **Image 27:** Close-up of the underside of a Temminck's pangolin tail with no tail pad at the tip of the tail.
© IUCN SSC Pangolin Specialist Group and Natural History Museum.



▲ **Image 28:** Close-up of the underside of a black-bellied pangolin's tail with pad at the tip of the tail. © Sangha Pangolin Project.

Asian Pangolins



Chinese pangolin (*Manis pentadactyla*)⁹

IUCN Status: Critically Endangered.

Distribution: Bangladesh; Bhutan; China; Hong Kong SAR China; India; Lao People's Democratic Republic; Myanmar; Nepal; Taiwan, Province of China; Thailand; Viet Nam.

Lifestyle: Ground-dwelling.

Distinguishing features: 1. Skin much lighter colour than scales, 2. Appears to have a helmeted head, 3. Hairs between scales, 4. Tail pad.

Image © Sarita Jnawali



Indian pangolin (*Manis crassicaudata*)¹⁰

IUCN Status: Endangered.

Distribution: Bangladesh; India; Nepal; Pakistan; Sri Lanka.

Lifestyle: Ground-dwelling.

Distinguishing features: 1. Skin slightly lighter colour to scales, 2. Thickest tail and largest scales of all Asian species, 3. Hairs between scales, 4. No tail pad.

Note: Indian pangolin distinguished from Sunda and Philippine as hind claws are smaller than forefeet.

Image © Gerald Cubitt



Philippine pangolin (*Manis culionensis*)¹¹

IUCN Status: Critically Endangered.

Distribution: The Philippines

Lifestyle: Semi-arboreal

Distinguishing features: 1. Skin much lighter colour than scales, 2. Hairs between scale, 3. Tail pad.

Note: Philippine pangolin distinguished from Sunda pangolin by shorter head length and longer tail:body ratio.

Image © Roger Dolorosa



Sunda pangolin (*Manis javanica*)¹²

IUCN Status: Critically Endangered.

Distribution: Brunei Darussalam; Cambodia; Indonesia; Lao People's Democratic Republic; Malaysia; Myanmar; Singapore; Thailand; Viet Nam.

Lifestyle: Semi-arboreal. **Distinguishing features:** 1. Skin lighter colour to scales, 2. Hairs between scales, 3. Tail pad.

Note: Sunda pangolin distinguished from Chinese and Indian as claws on hind and fore feet almost equal in length.

Image © Dan Challender

African Pangolins



Giant pangolin (*Smutsia gigantea*)¹³

IUCN Status: Endangered.

Distribution: Cameroon; Central African Republic; Congo; Congo, The Democratic Republic of the; Côte d'Ivoire; Equatorial Guinea; Gabon; Ghana; Guinea; Guinea-Bissau; Liberia; Nigeria; Rwanda; Senegal; Sierra Leone; South Sudan; Tanzania, United Republic of; Uganda.

Lifestyle: Ground-dwelling. **Distinguishing features:** 1. Large bodied (the largest pangolin species), 2. Skin similar colour to scales, 3. No hairs between scales, 4. No tail pad.

Note: Giant pangolin distinguished from Temminck's pangolin by longer, more pointed tail and longer snout.

Image © Tanzania Carnivore Program



Temminck's pangolin (*Smutsia temminckii*)¹⁴

IUCN Status: Vulnerable.

Distribution: Angola; Botswana; Burundi; Central African Republic; Chad; Ethiopia; Kenya; Malawi; Mozambique; Namibia; Rwanda; South Africa; South Sudan; Sudan; Tanzania, United Republic of; Uganda; Zambia; Zimbabwe.

Lifestyle: Ground-dwelling.

Distinguishing features: 1. Large bodied, 2. Skin similar colour to scales, 3. No hairs between scales, 4. No pad on tail. **Note:** Temminck's pangolin distinguished from giant pangolin by shorter, more rounded tail.

Image © Dana Allen



White-bellied pangolin (*Phataginus tricuspis*)¹⁵

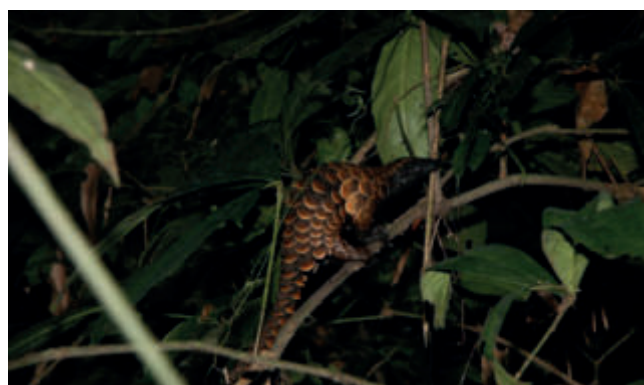
IUCN Status: Endangered.

Distribution: Angola; Benin; Burundi; Cameroon; Central African Republic; Congo; Congo, The Democratic Republic of the; Côte d'Ivoire; Equatorial Guinea; Gabon; Ghana; Guinea; Guinea-Bissau; Kenya; Liberia; Nigeria; Rwanda; Sierra Leone; South Sudan; Tanzania, United Republic of; Togo; Uganda; Zambia.

Lifestyle: Semi-arboreal.

Distinguishing features: 1. White skin on belly (lighter than scales), 2. Scales have three distinct points at end, 3. Long tail – 1.5 times length of head and body, 3. No hairs between scales, 4. Pad at end of tail.

Image © Darren Pietersen



Black-bellied pangolin (*Phataginus tetradactyla*)¹⁶

IUCN Status: Vulnerable.

Distribution: Cameroon; Central African Republic; Congo; Congo, The Democratic Republic of the; Côte d'Ivoire; Equatorial Guinea; Gabon; Ghana; Guinea; Liberia; Nigeria; Sierra Leone.

Lifestyle: Arboreal.

Distinguishing features:

1. Black skin on belly (darker than scales), 2. Scales are black/dark brown in colour, with yellow tips, 3. Long tail – twice the length of the head and body, 4. No hairs between scales, 5. Pad at end of tail.

Image © Rod Cassidy.

Additional resources

Additional resources and guidance on the management of confiscated pangolins, species reintroductions, and wildlife disease risk analysis can be found on the below links.

- IUCN SSC Guidelines for Reintroductions and Other Conservation Translocations (Available in multiple languages [here](#), including [English](#), [Chinese](#), [French](#), [Portuguese](#) and [Spanish](#))
- IUCN SSC Guidelines for Wildlife Disease Risk Analysis (Available in [English](#))
- CITES Resolution Conf. 17.8 Disposal of illegally traded and confiscated specimens of CITES-listed species (Available in [English](#)).
- Save Vietnam's Wildlife Sunda Pangolin Husbandry Guidelines (Available in [English](#))
- NARREC and HumaneLABS First Responders Manual. Temminck's Pangolin *Smutsia temminckii* (Available in [English](#) and [Portuguese](#))

References

1. Challender, D. W. S., Heinrich, S., Shepherd, C. R. and Katsis, L. K. D. (2020). 'Chapter 16 – International trade and trafficking in pangolins, 1900–2019' in Challender, D. W. S., Nash, H. C. and Waterman, C. (eds.) *Pangolins: Science, Society and Conservation*. Academic Press: 259–276.
2. Ingram, D. J., Cronin, D. T., Challender, D. W. S., Venditti, D. M. and Gonder, M. K. (2019). 'Characterising trafficking and trade of pangolins in the Gulf of Guinea', *Global Ecology and Conservation*, 17 (e00576): 1–11.
3. Clark, L., Nguyen, T. V. and Phuong, T. Q. (2008). 'A Long Way from Home: The Health Status of Asian Pangolins Confiscated from the Illegal Wildlife Trade in Viet Nam' in Pantel, S. and Chin, S. Y. (eds.) *Proceedings of the Workshop on Trade and Conservation of Pangolins Native to South and Southeast Asia*. 111–118.
4. Wright, N. and Jimerson, J. (2020). 'Chapter 30 – The rescue, rehabilitation and release of pangolins' in Challender, D. W. S., Nash, H. C. and Waterman, C. (eds.) *Pangolins: Science, Society and Conservation*. Academic Press: 495–504.
5. Nguyen, T. V., Clark, L. and Phuong, T. Q. (2014). Sunda Pangolin *Manis javanica* Husbandry Guidelines, Carnivore and Pangolin Conservation Program, Save Vietnam's Wildlife, Vietnam.
6. IUCN (2019). *Guidelines for the Management of Confiscated, Live Organisms*. Gland, Switzerland: IUCN, iv + 38
7. IUCN SSC (2013). *Guidelines for the Reintroductions and Other Conservation Translocations*. Version 1.0. Gland, Switzerland: IUCN Species Survival Commission, viiii + 57.
8. IUCN Red List (2020). *IUCN Red List of Threatened Species™*. Version 2020-1. Available at <https://www.iucnredlist.org/>
9. Challender, D. W. S., Wu, S., Kaspal, P., Khatiwada, A., Ghose, A., Ching-Min Sun, N., Mohapatra, R. K. and Laxmi Suwal, T. (2019). *Manis pentadactyla* (errata version published in 2020). The IUCN Red List of Threatened Species 2019: e.T12764A168392151. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12764A168392151.en>
10. Mahmood, T., Challender, D. W. S., Khatiwada, A., Andleeb, S., Perera, P., Trageser, S., Ghose, A. and Mohapatra, R. (2019). *Manis crassicaudata*. The IUCN Red List of Threatened Species 2019: e.T12761A123583998. Available at: <https://www.iucnredlist.org/species/12761/123583998>
11. Schoppe, S., Katsis, L. and Lagrada, L. (2019). *Manis culionensis*. The IUCN Red List of Threatened Species 2019: e.T136497A123586862. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T136497A123586862.en>
12. Challender, D. W. S., Willcox, D. H. A., Panjang, E., Lim, N., Nash, H., Heinrich, S. and Chong, J. (2019). *Manis javanica*. The IUCN Red List of Threatened Species 2019: e.T12763A123584856. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12763A123584856.en>
13. Nixon, S., Pietersen, D., Challender, D., Hoffmann, M., Godwill Ichu, I., Bruce, T., Ingram, D. J., Matthews, N. and Shirley, M. H. (2019). *Smutsia gigantea*. The IUCN Red List of Threatened Species 2019: e.T12762A123584478. Available at: <https://www.iucnredlist.org/species/12762/123584478>
14. Pietersen, D., Jansen, R. and Connelly, E. (2019). *Smutsia temminckii*. The IUCN Red List of Threatened Species 2019: e.T12765A123585768. Available at <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12765A123585768.en>
15. Pietersen, D., Moumbolou, C., Ingram, D. J., Soewu, D., Jansen, R., Sodeinde, O., Keboy Mov Linkey Iflankoy, C., Challender, D. W. S. and Shirley, M. H. (2019). *Phataginus tricuspis*. The IUCN Red List of Threatened Species 2019: e.T12767A123586469. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12767A123586469.en>
16. Ingram, D. J., Shirley, M. H., Pietersen, D., Godwill Ichu, I., Sodeinde, O., Moumbolou, C., Hoffmann, M., Gudehus, M. and Challender, D. W. S. (2019). *Phataginus tetradactyla*. The IUCN Red List of Threatened Species 2019: e.T12766A123586126. Available at: <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T12766A123586126.en>

Part 4: Directory of care facilities suitable for pangolins

▼ Chinese pangolin (*Manis pentadactyla*) © Sarita Jnawali.



Directory of care facilities suitable for pangolins

The following care facilities are suitable for longer-term placement of pangolins confiscated from illegal trade. They have agreed to be contacted by first responders by email and/or phone, as indicated in the below table, to provide advice on caregiving to confiscated pangolins and to potentially receive pangolins for long-term care.

The IUCN SSC Pangolin SG does not endorse or approve of these individuals, organisations and facilities, rather they are known to the group as having expertise in caring for pangolins.

AFRICA						
COUNTRY	INDIVIDUAL/FACILITY NAME	CONTACT NAME	APPROXIMATE LOCATION	TELEPHONE NO.	EMAIL	SPECIALISM
Benin	Jardin Botanique et Zoologique de l'Université Abomey-Calavi	Pierre Agbani	Cotonou	+229 97 60 89 87	pierreagabni@gmail.com	White-bellied pangolin
Cameroon	Tikki Hywood Foundation	-	Yaounde	+237 651 225 399	angelia.thf@gmail.com or tikkihywoodfoundation@gmail.com	All African pangolin species
Central African Republic	Sangha Lodge, Dzanga Sangha	Rod Cassidy	Bayanga	+27 127436557	info@sanghalodge.com	White-bellied pangolin and black-bellied pangolin
		Maja Gudehus	Bangui	+23675774142	ndima.centrafrique@gmail.com	
Ghana	A Rocha Ghana	Daryl Bosu	North Legon, Accra	+233 302546172	daryl.bosu@arocha.org or ghana@arocha.org	White-bellied pangolin and black-bellied pangolin
	Pangolin-GH	Prince Agro Pascal	Sunyani	+233 20 606 4911 or +233 243186441	pangolinh@gmail.com or agropascal1981@gmail.com	White-bellied pangolin and black-bellied pangolin
Liberia	Libassa Wildlife Sanctuary	Julie Vanassche	Kpan's Town, Margibi County	+231 777555844 (Julie) or 777614444 (Jason)	tikkihywoodfoundation@gmail.com or julievanassche@hotmail.com	White-bellied pangolin and black-bellied pangolin
	Liberia Chimpanzee Recue & Protection	Jenny Desmond	Charlesville, Magibi County	+231776147565 or +231770479183	jjdesmond@hotmail.com	All African pangolin species

AFRICA						
COUNTRY	INDIVIDUAL/ FACILITY NAME	CONTACT NAME	APPROXIMATE LOCATION	TELEPHONE NO.	EMAIL	SPECIALISM
Mozambique	Gorongosa Restoration Project	-	-	-	https://www.gorongosa.org/ contact	White-bellied pangolin
Namibia	Namibia Animal Rehabilitation Research and Education Centre	Liz Komen	Windhoek	+ 264 6126 4409 or +264 81129 0565	lizkomen@fastmail.fm	Temminck's pangolin
	Rare and Endangered Species Trust	Maria Diekmann	Kunene	+264 81 141 3839	rest@iway.na	
Nigeria	Pangolin Conservation and Research Center	Prof. Olajumoke Morenikeji	Ibadan, Oyo State	+234 80 5527 5915 or +234 902 304 2610	jumokemorenikeji@yahoo. co.uk or pcwg.nigeria@gmail. com	All African pangolin species
	St Mark's Animal Hospital	Dr. Mark Ofua	Ajah, Lagos	+234 80 6518 4913	saintmark2003@yahoo.com or saintmark2003@gmail.com	
South Africa	African Pangolin Working Group	Prof. Ray Jansen	Rustenburg	+27 82 555 1016	africanpangolinconservation@ gmail.com	All African pangolin species
	Johannesburg Wildlife Vet Hospital	Nicci Wright and Dr. Karin Lourens	Johannesburg	+27 71 248 1514	info@jwvh.org.za	Temminck's pangolin
Zimbabwe	Tikki Hywood Foundation	Lisa Hywood	Harare	+263 772 256 490 or +263 712 208 356	tikkihywoodfoundation@ gmail.com	Temminck's pangolin but advises on all African pangolin species
ASIA						
Cambodia	Wildlife Alliance Wildlife Release Station	-	Koh Kong	+855 12 500 094 (hotline)	wildlifealliance.report@gmail. com	Sunda pangolin
China	Endangered Animal Research Centre, South China Normal University	Wu Shi Bao	Guangzhou, Guangdong Province	+861 335 284 5166 or WeChat 1335284516	wushibao@163.com	Chinese pangolin and Sunda pangolin
Hong Kong SAR, China	Kadoorie Farm & Botanic Garden	Gary Ades	New Territories	+852 2483 7122	fauna@kfbg.org	Chinese pangolin

ASIA						
COUNTRY	INDIVIDUAL/ FACILITY NAME	CONTACT NAME	APPROXIMATE LOCATION	TELEPHONE NO.	EMAIL	SPECIALISM
India	Nandankanan Biological Park	Rajesh Mohapatra	Odisha	+91 674 2547850	support@nandankanan.org	Indian pangolin
Indonesia	Cikananga Wildlife Centre	Inge Tielen	Kabupaten Sukabumi, West Java	+62 85798561825	Cikanangawildlifecenter @gmail.com	Sunda pangolin
Laos	Lao Conservation Trust for Wildlife	Jeremy Phan	Ban Keun, Thoulakhom District, Vientiane Province	+856 20 94 139 533	info@lctwildlife.org	Temminck's pangolin
	Luang Prabang Wildlife Sanctuary, Free the Bears	Sengaloun 'Tak' Vongsay	Luang Prabang	+856 20 5965 5372	tak@freethebears.org	Chinese pangolin and Sunda pangolin
Malaysia	Lok Kawi Wildlife Park, Sabah Wildlife Department	Dr. Sen Nathan	Penampang, Sabah	+60 128019289	rhinosbh@gmail.com	Sunda pangolin
	Matang Wildlife Centre, Sarawak Forestry Corporation	Oswald Braken Tisen	Kuching, Sarawak	+60 82610088 or +60 168600625 (Hotline: +60 198859996)	info@sarawakforestry.com (or message on Facebook)	
	Perhilitan, Department of Wildlife and National Parks	-	Kuala Lumpur	+60 390866800	webmaster@wildlife.gov.my	Sunda pangolin
	Selamatkan Tenggiling Kita	Ju Lian Chong	Terengganu	+60 133055190	drchongjulian@gmail.com	Sunda pangolin
Nepal	National Trust for Nature Conservation, Central Zoo	Ambika Khatiwada	Lalitpur	+977 1 5528323 or +977 1 5538079	info@ntnc.org.np or centralzoo@ntnc.org.np	Chinese pangolin and Indian pangolin
Pakistan	Centre for Bioresource Research	Fakhar Abbas	Mohra Nur Islamabad	+92 0334 5362015 or +92 0346 6201075	pbrc@pbrc.edu.pk	Indian pangolin

ASIA						
COUNTRY	INDIVIDUAL/ FACILITY NAME	CONTACT NAME	APPROXIMATE LOCATION	TELEPHONE NO.	EMAIL	SPECIALISM
Philippines, The	Katala Institute for Ecology and Biodiversity Conservation (KIEBC), Katala Foundation Inc.	1st: Sabine Schoppe 2nd: Angeles G. Satioquia	Puerto Princesa City & Narra, Palawan	Sabine Schoppe: +63 9059734051 and +63 9464386749. Main office: +63 487161338. Angeles G. Satioquia: +63 9488385610	Email Sabine_schoppe@ web.de and copy in kficacatua2016@gmail.com	Philippine pangolin
Singapore	Wildlife Reserves Singapore	Sonja Luz	Singapore	+65 62693411	Sonja.luz@wrs.com.sg	Sunda pangolin
	ACRES Wildlife Rescue Centre	-	Singapore	+65 97837782	info@acres.org.sg	-
Taiwan	Taipei Zoo	Flora Hsuan-Yi Lo	Taipei City, Taiwan	+886 963 136 905 (WhatsApp)	hsuanyi@gmail.com or dwx44@zoo.gov.tw	Chinese pangolin
Thailand	Wildlife Friends Foundation Thailand	-	Phetchaburi	+66 890600906 (WhatsApp)	info@wfft.org	All Asian pangolin species
Vietnam	Save Vietnam's Wildlife	Thai Van Nguyen	Nho Quan District, Ninh Binh province	+84 2293848053	info@svw.vn	Sunda pangolin and Chinese pangolin

